

ABSTRACT

This invention relates to a window assembly with a window frame having a first window sash mounted fixedly in the frame and a second window sash mounted for movement between a closed position and at least one open position in parallel relation to the first sash. The window frame has a main frame and an auxiliary frame that mates with the main frame to define a common frame outline and to combine with at least one of the sash to define guideways to guide the second sash as it moves between the closed position and an open position.

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The embodiments of the invention in which an exclusive property or privilege is claimed are defined as follows.

1. A window assembly comprising a frame having a window opening formed therein, a first window sash mounted in the frame at one end of the window opening; a second window sash mounted in the window opening of the frame for movement with respect to the first window sash between a closed position in which it is aligned with the first window sash and serves to close the window opening and at least one open position in which it extends in parallel relation to the first sash to open at least part of the window opening, said frame having a main frame of moulded construction and an auxiliary frame of moulded construction that mates with the main frame to define a common frame outline and to combine with said first window sash to define guideways to guide said second sash as it moves between said closed position and said open position, said main frame and auxiliary frame being initially separate from one another along a line of separation which extends along said guideways whereby one face of each guideway is formed on said auxiliary guideway.

2. A window assembly as claimed in claim 1, wherein said main frame further comprises an intermediate rail which serves to rigidify the main frame and prevent direct vertical movement of the first window sash.

3. In a window frame assembly of the type in which fixed and sliding window sashes are aligned with one another when the window is closed and in which the upper end of the sliding window sash is initially tilted rearwardly out of alignment with the fixed window sash such that the sliding window sash can then

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slide to its open position, and wherein the sliding window sash is guided as it slides by means of first guide channels formed in opposite sides of the window frame assembly, said first guide channels each having oppositely disposed first and second side faces, the improvement wherein the window frame assembly comprises;

- a) a main frame formed from a unitary body of injection molded plastics material,
- b) an auxiliary frame formed from a unitary body of injection molded plastics material,
- c) said main frame and said auxiliary frame being adapted to be inserted into opposite sides of a window opening to cooperate with one another to secure the window frame assembly in the window opening in use with the fixed sash mounted therein such that it cooperates with the auxiliary frame to define a portion of the length of said first face of said guide channel, said main frame and auxiliary frame being separable from one another, when assembled, so as to part along a line of separation which extends along said first guide channel such that the first and second side faces of said first guide channels are on opposite sides of the line of separation and are carried by the main and auxiliary frames respectively.

4. A window assembly as claimed in claim 3, wherein said unitary body of the main frame comprises;

- a) a pair of side rail portions,
- b) a header portion extending transversely between the upper ends of the side rail portions,

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c) a sill portion extending transversely between the lower ends of the side rail portions,

d) an intermediate rail portion located between the header portion and the sill portion and extending transversely between the side rail portions to form first and second window openings in the main frame on opposite sides thereof, said intermediate rail forming a sill for the fixed window sash and a header for the sliding window sash.

5. A window assembly as claimed in claim 4, wherein said sill portion, side rail portions and intermediate rail portion each have retaining flanges projecting inwardly of the first window opening and cooperating with the sill, side rail and the intermediate rail portions to form a first window seat opening rearwardly therefrom to receive the sliding window sash when it is in the closed position, and wherein a first guide flange projects rearwardly from each of the window retaining flanges of the side rail portions of the sliding window retaining flanges, said first guide flange having an outer edge which forms a first portion of said first side face of said first guide channel, said first portion of said first side face extending from adjacent the sill portion to the intermediate rail portion.

6. A window assembly as claimed in claim 5, wherein said header portion, said rail portions and the intermediate rail portion each have retaining flanges projecting inwardly of the second window opening which cooperate with the sill, side rail and the intermediate rail portions to form a second window seat opening rearwardly therefrom in which the fixed window sash is seated.

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7. A window assembly as claimed in claim 6, wherein said second window sash has side rail portions each of which have an outer edge which forms the remainder of said first side face of said first guide channel.

8. A window assembly as claimed in claim 7, wherein said unitary body of the auxiliary frame comprises;

- a) a pair of side rail portions,
- b) a header portion extending transversely between the upper ends of the side rail portions, and
- c) a sill portion extending transversely between the lower ends of the side rail portions,
- d) said side rail portions each having shoulders which are disposed opposite said first side face of said first guide channel and form said second side face of said first guide channel when said auxiliary frame is operably mounted with respect to said main frame.

9. A window assembly as claimed in claim 8, wherein a tilting channel extends forwardly from each first guide channel into the first window seat to guide the sliding window sash as it is tilted into and out of the first window seat, the tilting channel having first and second side edges formed on the main frame and the auxiliary frame respectively.

10. A window assembly as claimed in claim 9, wherein locking recesses are formed at the inner end of the tilting channels, the locking recesses extending laterally outwardly with respect to said first window seat and having oppositely disposed side wall portions formed on the main frame and the auxiliary frame respectively.

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11. A window assembly comprising;

a) a main frame formed from a unitary body of injection molded plastics material comprising;

(i) a pair of side rail portions,

(ii) a header portions extending transversely between the upper ends of the side rail portions,

(iii) a sill portion extending transversely between the lower ends of the side rail portions,

(iv) an intermediate rail portion located between the header portion and the sill portion and extending transversely between the side rail portions to form first and second window openings in the main frame on opposite sides thereof, said intermediate rail forming sill for a fixed window sash and a header for a sliding window sash and cooperating with the header and side rails to form a seat for a fixed window sash,

b) an auxiliary frame formed from a unitary body of injection molded plastics material comprising,

(i) a pair of side rail portions,

(ii) a header portion extending transversely between the upper ends of the side rail portions,

(iii) a sill portion extending transversely between the upper ends of the side rail portions, said header and sill portions forming the only connection between the side rail portions,

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c) said main frame and said auxiliary frame being adapted to be inserted into opposite sides of a window opening to cooperate with one another to secure the window frame assembly in the window opening in use and to retain a fixed window between the header and sill portions.

12. A window assembly as claimed in claim 11, wherein;

(i) said sill portion, said rail portions and the intermediate rail portion each have retaining flange projecting inwardly of the first window opening and cooperating therewith to form a first window seat opening rearwardly therefrom to receive the sliding window sash when it is in the closed position,

(ii) said header portion, side rail portions and the intermediate rail portion each having retaining flanges projecting inwardly of the second window opening which cooperate therewith to form a second window seat opening rearwardly therefrom to receive the fixed window sash.

13. In a window frame assembly of the type in which fixed and sliding window sashes are aligned with one another when the window is closed and in which the upper end of the sliding window sash is initially tilted rearwardly out of alignment with the fixed window sash such that the sliding window sash can then slide to its open position, and wherein the sliding window sash is guided as it slides by means of first guide channels formed in opposite sides of the window frame assembly, said first guide channels each having oppositely disposed side faces, the improvement wherein the window frame assembly comprises;

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- a) a main frame formed from a unitary body of injection molded plastics material,
- b) an auxiliary frame formed from a unitary body of injection molded plastics material,
- c) said main frame and said auxiliary frame being adapted to be inserted into opposite sides of a window opening to cooperate with one another to secure the window frame assembly in the window opening in use and being separated from one another, when assembled, along a line of separation which extends along said first guide channel such that the first and second side faces of said first guide channels are on opposite sides of the line of separation and are carried by the main and auxiliary frames respectively, said unitary body of the main frame comprising;
 - d) a pair of side rail portions,
 - e) a header portion extending transversely between the upper ends of the side rail portions,
 - f) a sill portion extending transversely between the lower ends of the side rail portions,
 - g) an intermediate rail portion located between the header portion and the sill portion and extending transversely between the side rail portions to form first and second window openings in the main frame on opposite sides thereof, said intermediate rail forming a sill for the fixed window sash and a header for the sliding window sash,

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h) said sill portion, side rail portions and intermediate rail portion each have retaining flanges projecting inwardly of the first window opening and cooperating with the sill, side rail and the intermediate rail portions to form a first window seat opening rearwardly therefrom to receive the sliding window sash when it is in the closed position, and wherein a first guide flange projects rearwardly from each of the window retaining flanges of the side rail portions of the sliding window retaining flanges, said first guide flange having an outer edge which forms a first portion of said first side face of said first guide channel, said first portion extending from adjacent the sill portion to the intermediate rail portion,

i) said header portion, said rail portions and the intermediate rail portion each have retaining flanges projecting inwardly of the second window opening which cooperate with the sill, side rail and the intermediate rail portions to form a second window seat opening rearwardly therefrom to receive the fixed window sash when it is in the closed position,

k) a second window sash seated in said second window opening, said second window sash having side rail portions which have an outer edge which forms the remainder of said first side wall of said first guide channel,

l) said unitary body of the auxiliary frame comprising;

a) a pair of side rail portions,

b) a header portion extending transversely between the upper ends of the side rail portions, and

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c) a sill portion extending transversely between the lower ends of the side rail portions,

d) said side rail portions each having shoulders which are disposed opposite said first side wall of said first guide channel and form said second side wall of said first guide channel when said auxiliary frame is operably mounted with respect to said main frame.

14. A window assembly as claimed in claim 13, wherein a tilting channel extends forwardly from each first guide channel into the first window seat to guide the sliding window sash as it is tilted into and out of the first window seat, the tilting channel having first and second side edges formed on the main frame and the auxiliary frame respectively.

15. A window assembly as claimed in claim 14, wherein locking recesses are formed at the inner end of the tilting channels, the locking recesses extending laterally outwardly with respect to said first window seat and having oppositely disposed side wall portions formed on the main frame and the auxiliary frame respectively.

16. A window assembly comprising;

a) a main frame formed from a unitary body of injection molded plastics material comprising;

(i) a pair of side rail portions,

(ii) a header portions extending transversely between the upper ends of the side rail portions,

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(iii) a sill portion extending transversely between the lower ends of the side rail portions,

(iv) an intermediate rail portion located between the header portion and the sill portion and extending transversely between the side rail portions to form first and second window openings in the main frame on opposite sides thereof, said intermediate rail forming sill for a fixed window sash and a header for a sliding window sash,

(v) said sill portion, said rail portions and the intermediate rail portion each have retaining flange projecting inwardly of the first window opening and cooperating therewith to form a first window seat opening rearwardly therefrom to receive the sliding window sash when it is in the closed position, said header portion, side rail portions and the intermediate rail portion each having retaining flanges projecting inwardly of the second window opening which cooperate therewith to form a second window seat opening rearwardly therefrom to receive the fixed window sash.

b) an auxiliary frame formed from a unitary body of injection molded plastics material, said auxiliary frame comprising

(i) a pair of side rail portions,

(ii) a header portion extending transversely between the upper ends of the side rail portions, and

(iii) a sill portion extending transversely between the lower ends of the side rail portions,

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(iv) said side rail portions each having shoulders which are disposed opposite said first side wall of said first guide channel and form said second side wall of said first guide channel when said auxiliary frame is operably mounted with respect to said main frame.

c) said main frame and said auxiliary frame being adapted to be inserted into opposite sides of a window opening to cooperate with one another to secure the window frame assembly in the window opening in use.

17.. A window assembly as claimed in claim 1, further comprising a pair of latch bars slidably mounted in said second window sash for movement between an extended and a partial retracted second position in which the actuator bars are withdrawn from the locking recesses but remain seated in said guideways, in which they project laterally from opposite sides of said second window sash into locking recesses formed in each of said guideways, and a single latch bar actuator engaging each latch bar, said actuator being movable relative to the second window sash to simultaneously move said latching bars to and from between said extended and partially retracted positions whereby the movement of both latch bars to the partially retracted position may be effected by said actuator.

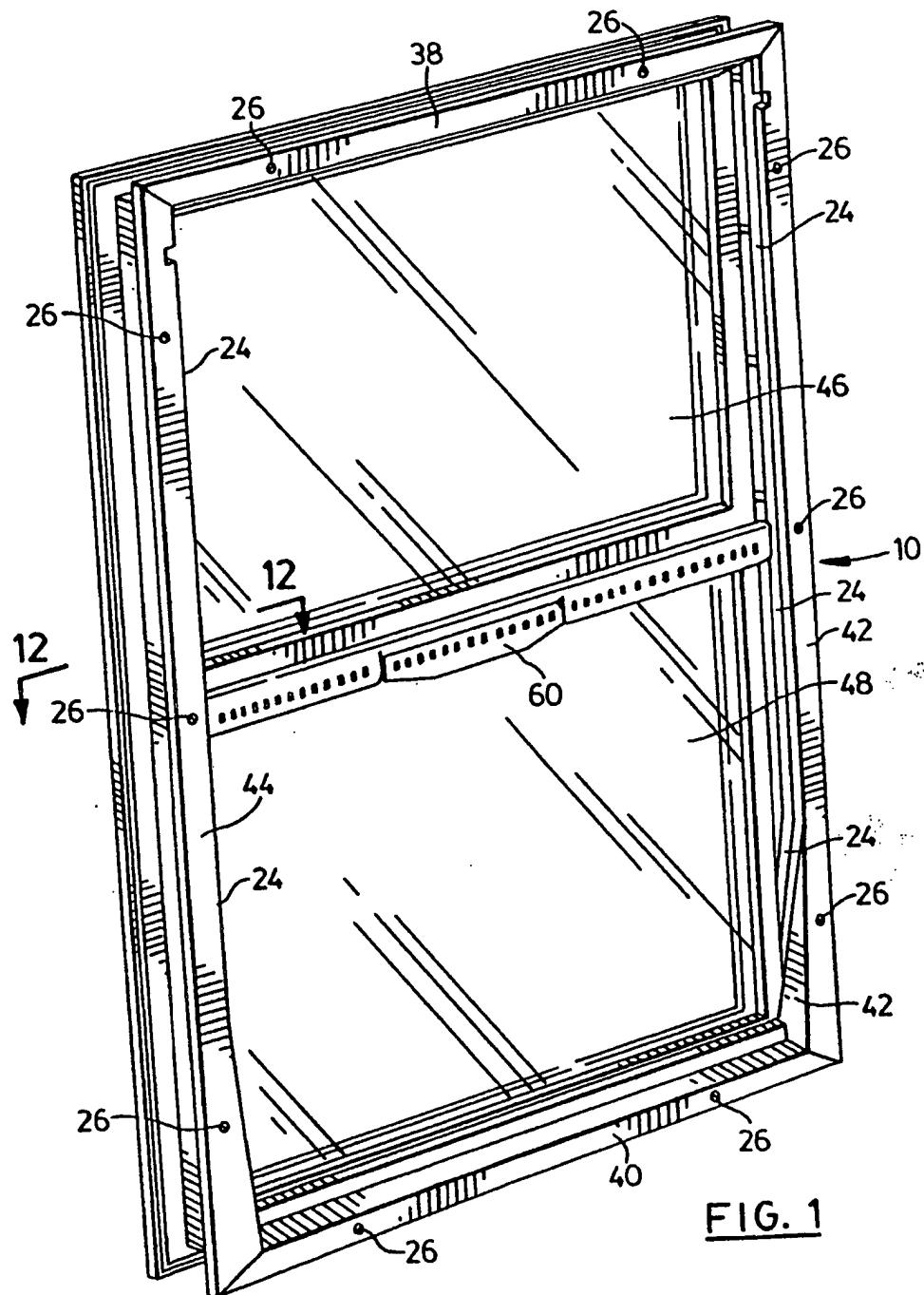
18.. In a window assembly of the type having a window frame which has a pair of side rails, a guide channel extending longitudinally of each side rail and a sliding sash mounted for movement along the side rails, the improvement of;

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a) a plurality of locking recesses formed in the guide channels at longitudinally spaced intervals therealong, said locking recesses being arranged in pairs,

b) a pair of latch bars slidably mounted in said sliding sash, each latch bar having a proximal end and a distal end, the distal ends being arranged to project laterally from the sliding window sash, said latch bars being movable relative to the sliding window sash between a fully extended position in which the distal ends project a sufficient distance from the sash to extend into a pair of said locking recesses to prevent movement of the sliding sash and a partially retracted second position in which the distal ends are withdrawn from the locking recesses while remaining in the guide channels to act as guide rods for retaining the sliding sash in and guiding the sliding sash along the guide channels,

c) actuator means mounted on the sliding sash and engaging the proximal ends of each latch bar, said actuator means being manually operable to simultaneously move the latch bars to and fro between the fully extended position and the partially retracted position.



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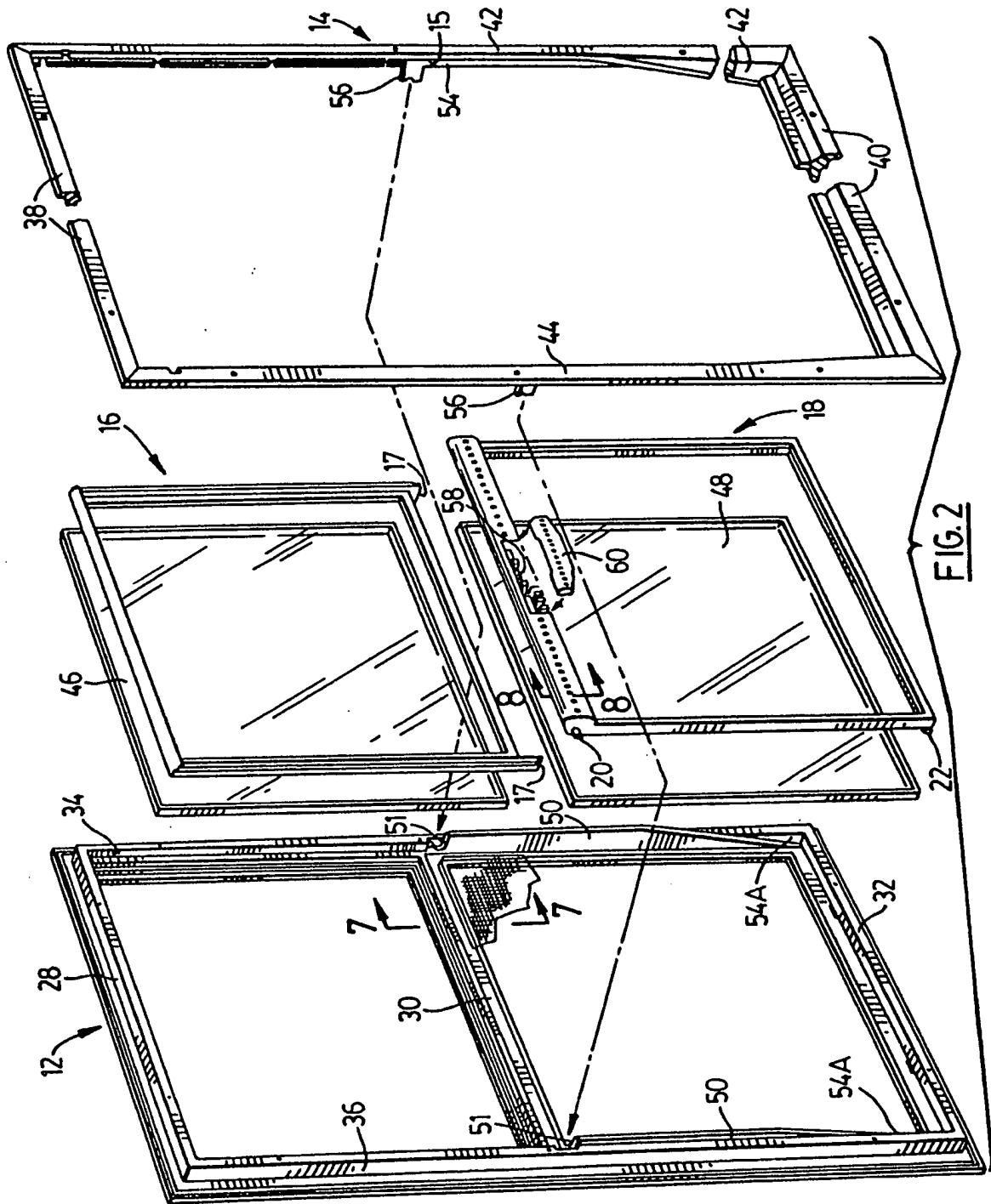
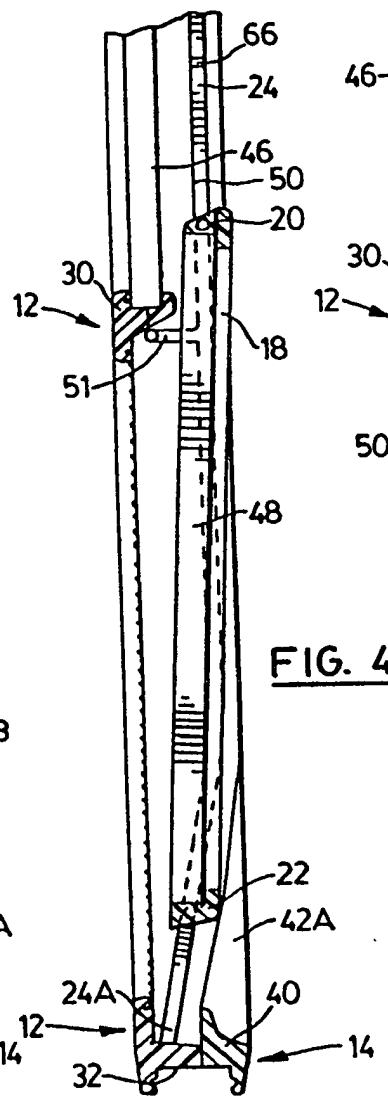
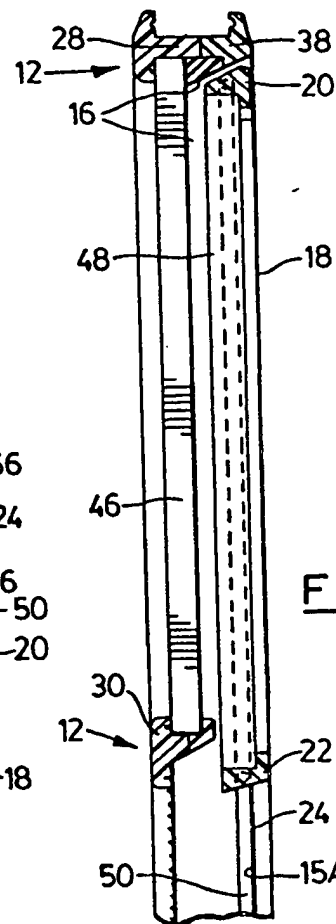
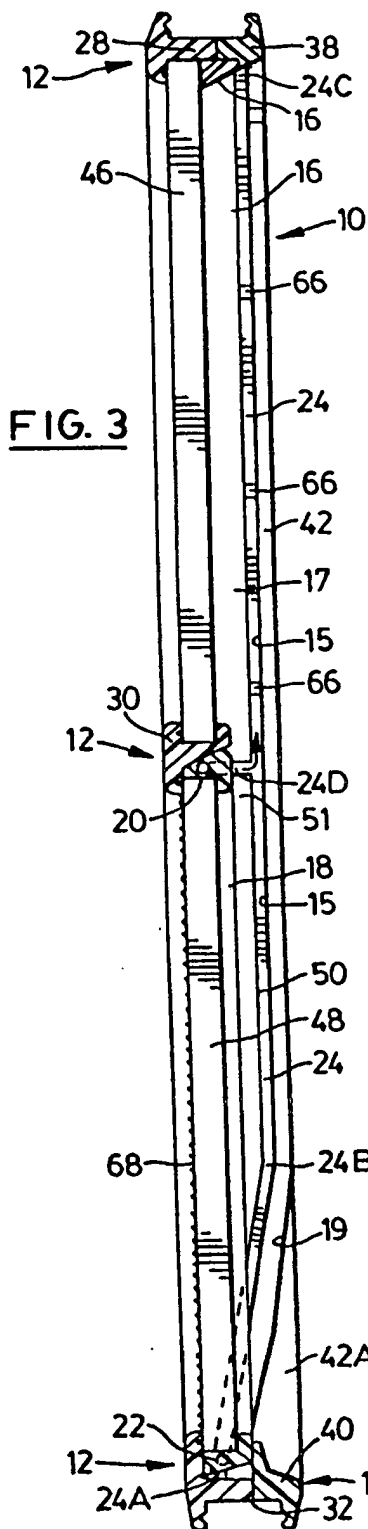


FIG. 2

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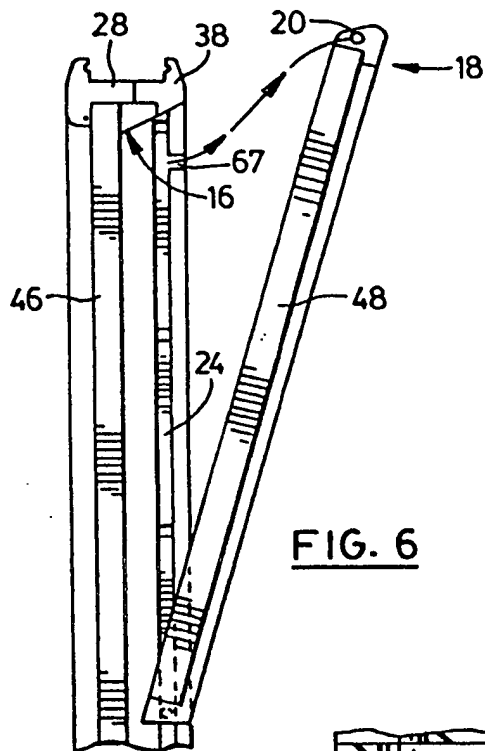


FIG. 6

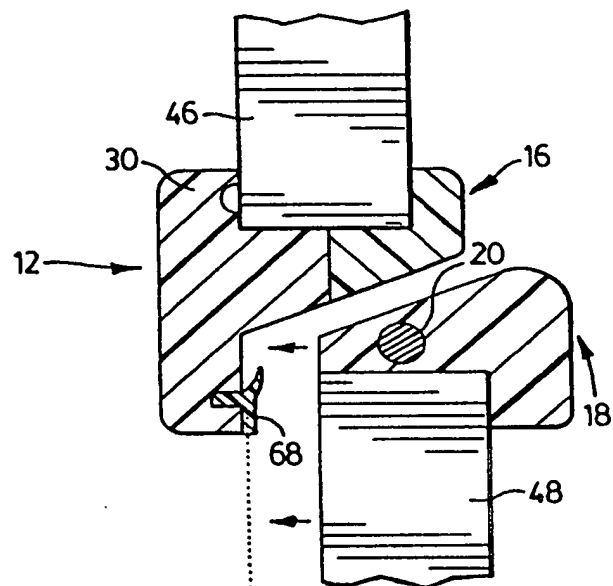


FIG. 7

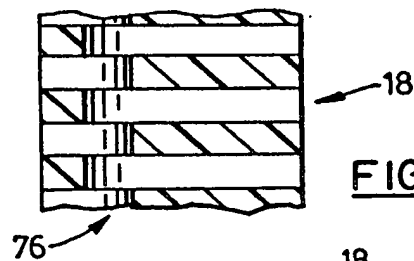


FIG. 9

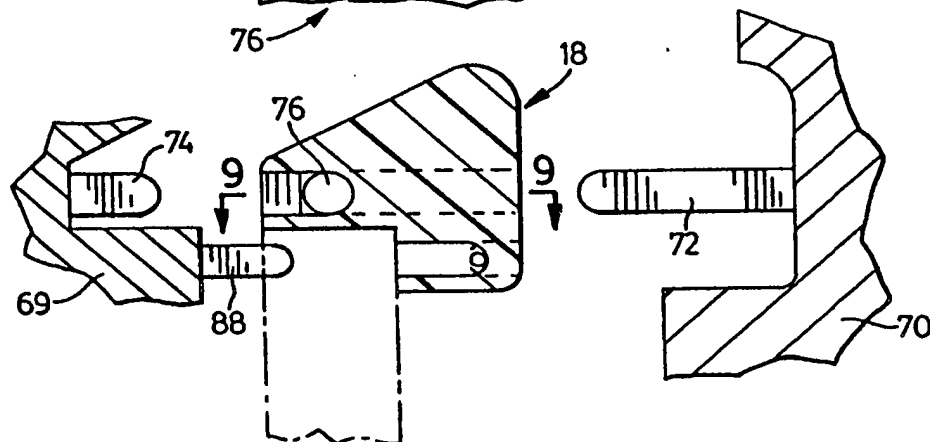


FIG. 8

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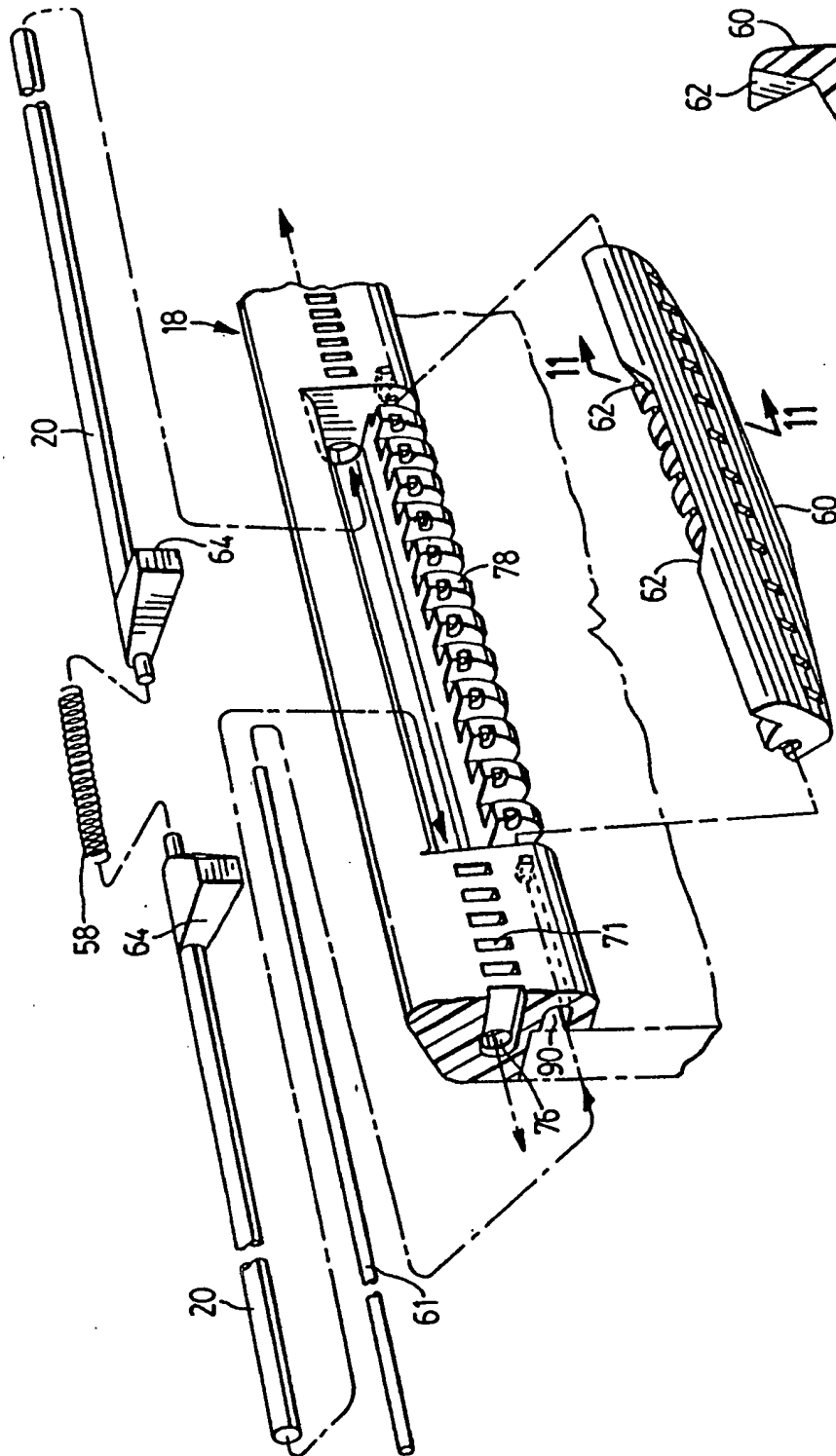


FIG. 10

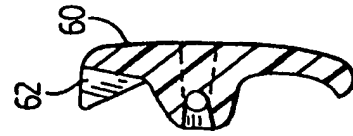


FIG. 11

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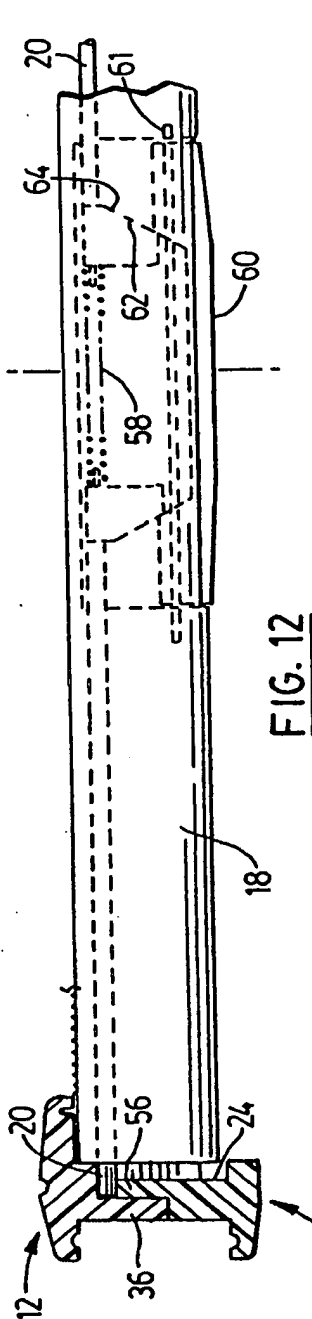


FIG. 12

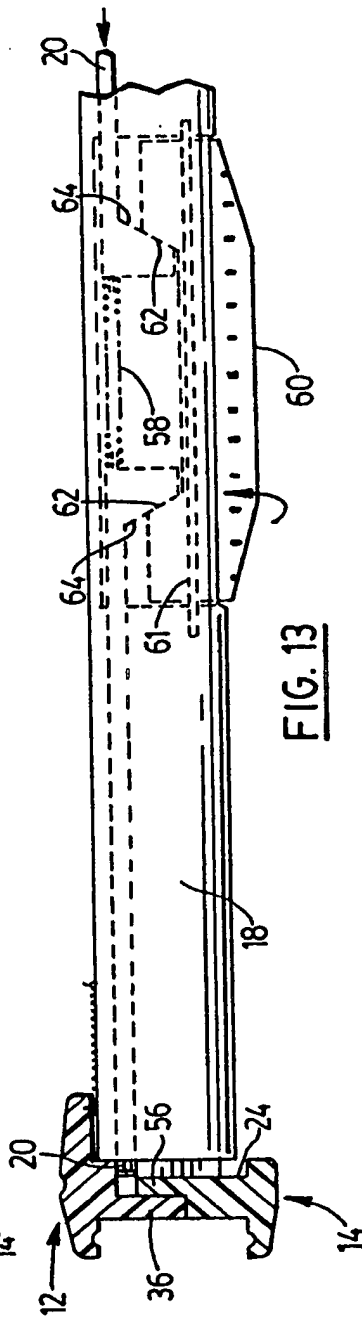


FIG. 13

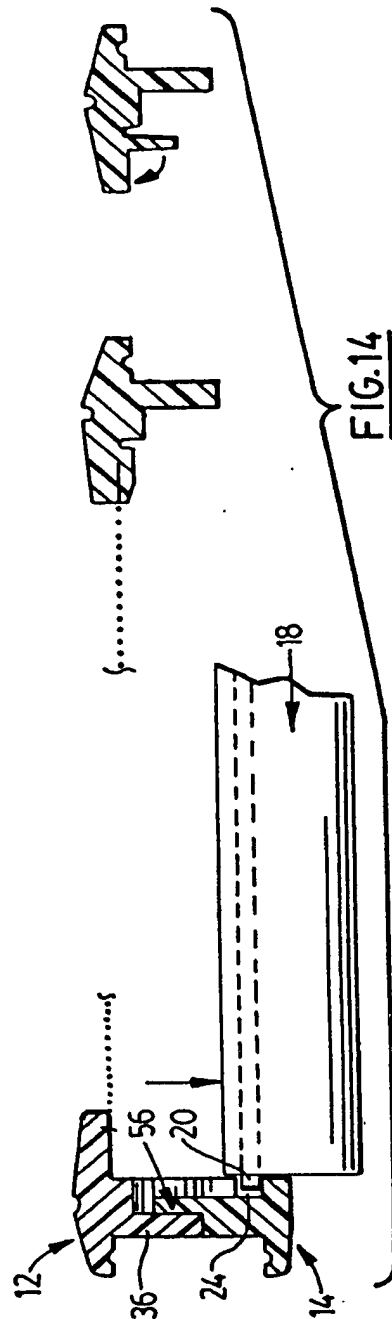


FIG. 14

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